SEQUENCE LISTING

<110> Maliga, Pal
Silhavy, Daniel
Sriraman, Priya

<120> Plastid Promoters for Transgene
Expression in the Plastids of Higher Plants

<130> Rut 97-0097

<140> To be assigned
<141> September 16, 2003

<150> 09/445,283
<151> 1999-12-03

<150> PCT/US98/11437
<151> 1998-06-03

<150> 60/058,670
<151> 1997-09-12

<150> 60/048,376
<151> 1997-06-03

<160> 64

<170> FastSEQ for Windows Version 3.0

<210> 1
<211> 149
<212> DNA
<213> Zea mays

<400> 1
gactgtttta tcaattcatt tttattccat ttcaacccct gctaaattcg aactttcgtc 60
gaaatcgtct ctattcatat gtatgaaata catatatgaa atacgtatgt ggagttccct 120
agaatttcat gtgattcagt aaacagaat 149

<210> 2
<211> 149
<212> DNA
<213> Zea mays

<400> 2
ttgcaaaaat ctaaaaaaaa tgatatttaa ttaatatcaa ctcattaaat aaaaaaagga 60
gtatgcttaa gttaatgaat atgtttcatt catatataat gtgtacaccc tgtgtacgtt 120
ctatcctata ggaattttac tataggaat 149

<210> 3
<211> 149
<212> DNA
<213> Zea mays

<400> 3
atcacggatt ctttttttctt tattcaatct gttttacctt ccttatatgt agaatatttc 60

aatctatgta ttaatagaat ctatagtatt cttatagaat aagaaaaaaa aaatgaagat 120
aataaactgc ggattctttc tttctcttc 149

<210> 4
<211> 41
<212> DNA
<213> Zea mays

<400> 4
taagttaatg aatatgtttc attcatatat aatgtgacac c 41

<210> 5
<211> 41
<212> DNA
<213> Sorghum

<400> 5
taagttaatg aatatgtttc attcatatat aatgtgacac c 41

<210> 6
<211> 41
<212> DNA
<213> Hordeum vulgare

<400> 6
taggttaatg aatatgtttc attcatatat aatgcgacac c 41

<210> 7
<211> 41
<212> DNA
<213> Triticum aestivum

<400> 7
taggttaatg aatatgtttc attcatatat aatgcgacac c 41

<210> 8
<211> 41
<212> DNA
<213> Oryza sativa

<400> 8
tcattcatat aatatgtttc attcatatat aatgggacac c 41

<210> 9
<211> 41
<212> DNA
<213> Zea mays

<400> 9
ctctattcat atgtatgaaa tacatatatg aaatacgtat g 41

<210> 10
<211> 41
<212> DNA

<213> Oryza sativa

<400> 10
ctctattcat atgtatgaaa tacatatatg aaatacgtat g 41

<210> 11
<211> 39
<212> DNA
<213> Nicotinium tobacco

<400> 11
caggttggaa tgtgtattat cataataatg gtagaaatg 39

<210> 12
<211> 41
<212> DNA
<213> Zea mays

<400> 12
ttaatagaat ctatagtatt cttatagaat aagaaaaaaa a 41

<210> 13
<211> 41
<212> DNA
<213> Oryza sativa

<400> 13
ttaatagaat ctatagtatt catatagaat aagaaaaaaa c 41

<210> 14
<211> 41
<212> DNA
<213> Triticum aestivum

<400> 14
ttaatagaat ctatagtatt catatagaat aagaataaaa t 41

<210> 15
<211> 251
<212> DNA
<213> Nicotinium tobacco

<400> 15
tcgaatcacc attctttttt ctttattcaa tctgtcttat cctacttata tgtataatct 60
ttcaatctat gtattatttc aatctacgta cttaatagaa tctatagtat tcatatagaa 120
taagaaaaaa acgtgaaaac aataaactgc ggattctttc tttctcttcc attcttacgt 180
ttccatatta aagtgtagtt ttcttactta aatttaataa tattaatcta atatgcccat 240
tggtgttcca a 251

<210> 16
<211> 199
<212> DNA
<213> Oryza sativa

<400> 16
tagaaagacc tattcgtaat aatttgagtt tattcattct gtctttcttt atgaattttt 60

ataatctatg gataaaataa atacgataaa aaccaatatg aatattataa agacaataaa 120
aaaaattgtt acgtttccac ctcaaagtga aatatagtat ttagttcttt ctttcattta 180
atgcctattg gtgttccaa 199

<210> 17
<211> 283
<212> DNA
<213> Oryza sativa

<400> 17
gagctcgaat caccattctt ttttctttat tcaatctgtc ttatcctact tatatgtata 60
atctttcaat ctatgtatta tttcaatcta cgtacttaat agaatctata gtattcatat 120
agaataagaa aaaaacgtga aaacaataaa ctgcggattc tttctttctc ttccattctt 180
acgtttccat attaaagtgt agttttctta cttaaattta ataatattaa tctaatatgc 240
ccattggtgt tccaagaatt cagttgtagg gagggatcca tgg 283

<210> 18
<211> 77
<212> DNA
<213> Marchantia polymorpha

<400> 18
taaataaata gaatttcatt tttacgtttt tttattatag aagagtattt tgtttgtgga 60
agaaaaaaaa aatgcct 77

<210> 19
<211> 77
<212> DNA
<213> Pinus contorta

<400> 19
tgttacacaa cttcatatac tttacgttcc catattatag tatagtgctt aacttctttc 60
cattaaaaca aatgccc 77

<210> 20
<211> 80
<212> DNA
<213> Spinacia oleracea

<400> 20
taaagacaat aaccgtaatt attacgtttc cacatcaaag tgaaatagag tacttaattt 60
ttttctttca tttaatgcct 80

<210> 21
<211> 79
<212> DNA
<213> Nicotinium tobacco

<400> 21
taaagacaat aaaaaaaatt gttacgtttc cacctcaaag tgaaatatag tatttagttc 60
tttctttcat ttaatgcct 79

<210> 22
<211> 82

<212> DNA
<213> Oryza sativa

<400> 22
ttctttcttt ctcttccatt cttacgtttc catattaaag tgtagttttc ttacttaaat 60
ttaataatat taatctaata tg 82

<210> 23
<211> 82
<212> DNA
<213> Zea mays

<400> 23
ttctttcttt ctcttccatt cttacgtttc catattaaag tgtagttttt ttacttaaat 60
ttaataatat taatctaata tg 82

<210> 24
<211> 83
<212> DNA
<213> Arabidopsis

<400> 24
ttaaaaaacg aaaccccaat tttacgtttc cacatcaaag tgaaatagag aacttcattc 60
tctttttttt tcatttcatg cct 83

<210> 25
<211> 59
<212> DNA
<213> Nicotinium tobacco

<400> 25
gagctctata aagacaataa aaaaaattgt tacgtttcca cctcaaagtg aaactcgag 59

<210> 26
<211> 35
<212> DNA
<213> Nicotinium tobacco

<400> 26
aaaaaaaatt gttacgtttc cacctcaaag tgaaa 35

<210> 27
<211> 2141
<212> DNA
<213> Artificial Sequence

<220>
<223> Chimeric uidA gene

<400> 27
gagctctata aagacaataa aaaaaattgt tacgtttcca cctcaaagtg aaactcgaga 60
attcagttgt agggagggat ccatggaaca aaaactcatt tctgaagaag acttggtacg 120
tcctgtagaa accccaaccc gtgaaatcaa aaaactcgac ggcctgtggg cattcagtct 180
ggatcgcgaa aactgtggaa ttgatcagcg ttggtgggaa agcgcgttac aagaaagccg 240
ggcaattgct gtgccaggca gttttaacga tcagttcgcc gatgcagata ttcgtaatta 300
tgcgggcaac gtctggtatc agcgcgaagt ctttataccg aaaggttggg caggccagcg 360
tatcgtgctg cgtttcgatg cggtcactca ttacggcaaa gtgtgggtca ataatcagga 420

```
agtgatggag catcagggcg gctatacgcc atttgaagcc gatgtcacgc cgtatgttat     480
tgccgggaaa agtgtacgta tcaccgtttg tgtgaacaac gaactgaact ggcagactat     540
cccgccggga atggtgatta ccgacgaaaa cggcaagaaa aagcagtctt acttccatga     600
tttctttaac tatgccggaa tccatcgcag cgtaatgctc tacaccacgc cgaacacctg     660
ggtggacgat atcaccgtgg tgacgcatgt cgcgcaagac tgtaaccacg cgtctgttga     720
ctggcaggtg gtggccaatg gtgatgtcag cgttgaactg cgtgatgcgg atcaacaggt     780
ggttgcaact ggacaaggca ctagcgggac tttgcaagtg gtgaatccgc acctctggca     840
accgggtgaa ggttatctct atgaactgtg cgtcacagcc aaaagccaga cagagtgtga     900
tatctacccg cttcgcgtcg gcatccggtc agtggcagtg aagggccaac agttcctgat     960
taaccacaaa ccgttctact ttactggctt tggtcgtcat gaagatgcgg acttacgtgg    1020
caaaggattc gataacgtgc tgatggtgca cgaccacgca ttaatggact ggattggggc    1080
caactcctac cgtacctcgc attacccttа cgctgaagag atgctcgact gggcagatga    1140
acatggcatc gtggtgattg atgaaactgc tgctgtcggc tttaacctct ctttaggcat    1200
tggtttcgaa gcgggcaaca agccgaaaga actgtacagc gaagaggcag tcaacgggga    1260
aactcagcaa gcgcacttac aggcgattaa agagctgata gcgcgtgaca aaaaccaccc    1320
aagcgtggtg atgtggagta ttgccaacga accggatacc cgtccgcaag tgcacgggaa    1380
tatttcgcca ctggcggaag caacgcgtaa actcgacccg acgcgtccga tcacctgcgt    1440
caatgtaatg ttctgcgacg ctcacaccga taccatcagc gatctctttg atgtgctgtg    1500
cctgaaccgt tattacggat ggtatgtcca aagcggcgat ttggaaacgg cagagaaggt    1560
actggaaaaa gaacttctgg cctggcagga gaaactgcat cagccgatta tcatcaccga    1620
atacggcgtg gatacgttag ccgggctgca ctcaatgtac accgacatgt ggagtgaaga    1680
gtatcagtgt gcatggctgg atatgtatca ccgcgtcttt gatcgcgtca gcgccgtcgt    1740
cggtgaacag gtatggaatt tcgccgattt tgcgacctcg caaggcatat tgcgcgttgg    1800
cggtaacaag aaagggatct tcactcgcga ccgcaaaccg aagtcggcgg cttttctgct    1860
gcaaaaacgc tggactggca tgaacttcgg tgaaaaaccg cagcagggag gcaaacaatg    1920
aatcaacaac tctcctggcg caccatcgtc ggctacagcc tcggtgggga attgctctag    1980
agaaattcaa ttaaggaaat aaattaagga aatacaaaaa ggggggtagt catttgtata    2040
taactttgta tgacttttct cttctatttt tttgtatttc ctccctttcc ttttctattt    2100
gtatttttтt atcattgctt ccattgaatt aattcaagct t                       2141
```

<210> 28
<211> 200
<212> DNA
<213> Zea mays

<400> 28

```
caccacgatc gaacgggaat ggataggagg cttgtgggat tgacgtgata gggtagggtt      60
ggctatactg ctggtggcga actccaggct aataatctga agcgcatgga tacaagttat     120
ccttggaagg aaagacaatt ccgaatccgc tttgtctacg aataaggaag ctataagtaa     180
tgcaactatg aatctcatgg                                                 200
```

<210> 29
<211> 200
<212> DNA
<213> Oryza sativa

<400> 29

```
cgccacgatc gaacgggaat ggataagagg cttgtgggat tgacgtgata gggtagggtt      60
ggctatactg ctggtggcga actccaggct aataatctga agcgcatgga tacaagttat     120
ccttggaagg aaagacaatt ccgaatccgc tttgtctacg aataaggaag ctataagtaa     180
tgcaactatg aatctcatgg                                                 200
```

<210> 30
<211> 61
<212> DNA
<213> Zea mays

<400> 30

```
ttaatagaat ctatagtatt cttatagaat aagaaaaaaa aaatgaagat aataaactgc      60
```

g 61

<210> 31
<211> 60
<212> DNA
<213> Oryza sativa

<400> 31
ttaatagaat ctatagtatt catatagaat aagaaaaaaa cgtgaaaaca ataaactgcg 60

<210> 32
<211> 133
<212> DNA
<213> Artificial Sequence

<220>
<223> Prrn promoter

<400> 32
gctccccgc cgtcgttcaa tgagaatgga taagaggctc gtgggattga cgtgaggggg 60
cagggatggc tatattctgg gagcgaactc cgggcgaata cgaagcgctt ggatacagtt 120
gtagggaggg att 133

<210> 33
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 33
gagaggaatg gaagtgattg aca 23

<210> 34
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 34
gagcagggtc ggtcaaatc 19

<210> 35
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 35
atcctagcgt gagggaatgc ta 22

<210> 36

<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 36
aggtctgatg gtatatctca gtat 24

<210> 37
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 37
cgcttctgta actgg 15

<210> 38
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 38
tgactgtcaa ctacag 16

<210> 39
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 39
ggtacttttg gaacaccaat gggcat 26

<210> 40
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 40
gaagtagtag gattggttct cataat 26

<210> 41
<211> 27

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 41
ggtctagaat tcctatcgaa ttccttc 27

<210> 42
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 42
gaatctacaa aatcgctcga attg 24

<210> 43
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 43
actcttcatc aatccctacg 20

<210> 44
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 44
ggtctagact acactttaat atgga 25

<210> 45
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 45
gggaattctg tttgtaagaa ga 22

<210> 46

<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 46
ggctcgaggg acaactcgat aggattagg 29

<210> 47
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 47
ggtctagaat ctagcaatca tggaatc 27

<210> 48
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 48
ggctcgagcg tgctattcta aatcgt 26

<210> 49
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 49
gggagctcga atcaccattc ttt 23

<210> 50
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 50
gggaattctt ggaacaccaa tgggcat 27

<210> 51
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 51
ggccgtcgag ttttttgatt tcacgggttg ggg 33

<210> 52
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino Acids 410-419 of uidA gene

<400> 52
Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10

<210> 53
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 53
ccgagctcga atgagtccat acttat 26

<210> 54
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 54
ccgagctcaa aaccaatatg aatattata 29

<210> 55
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 55
ccgagctcta taaagacaat aaaaaaaat 29

<210> 56
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 56
ccctcgagaa acgtaacaat ttttttt 27

<210> 57
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 57
ccctcgagtt tcactttgag gtgga 25

<210> 58
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 58
ccctcgagag aactaaatac tatatttc 28

<210> 59
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 59
ccctcgagat atgacccaat atatctg 27

<210> 60
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 60
acttgcttta gtttctgttt gtggtgacat 30

<210> 61
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 61
agaagtagta ggattggttc tcataat 27

<210> 62
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 62
ccgccagcgt tcatcctgag c 21

<210> 63
<211> 11
<212> DNA
<213> Artificial Sequence

<220>
<223> Consensus Sequence

<221> variation
<222> (0)...(0)
<223> n at position 9 is a or g

<400> 63
catagaatna a 11

<210> 64
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Consensus Sequence

<221> variation
<222> (0)...(0)
<223> n at position 8 is a or g

<400> 64
atagaatnaa 11